

INDICATION OF SEMINAL FLUID

A. SCOPE

A.1 P30 is a glycoprotein produced in the prostate gland. A positive test for the presence of p30 in a sample can be used to indicate seminal fluid. P30 may also be found in breast milk and in the urine of some males; the latter may be due to leakage from the prostate into the urethra. P30 has not been detected in the testes, seminal vesicles, vas deferens, erythrocytes, tears, perspiration, saliva, menstrual blood, stomach tissue, small/large intestine, pancreas, liver, kidney, and non-prostatic carcinomas. It has been detected at very low levels in vaginal fluid of some females.

P30 is present in semen of several Old World monkeys (e.g. orangutan, macaque) in amounts similar to levels seen in humans. However, the acid phosphatase activity in these monkey semen samples is quite low. P30 has not been detected in semen from various mammals: dog, pig, sheep, goat, and squirrel monkey.

The *OneStep* ABACard® p30 test is designed to qualitatively detect p30 for the indication of seminal fluid. In this test procedure a specimen is added to the sample well "S" and allowed to soak in. If p30 is present in the specimen, it reacts with the mobile monoclonal antihuman p30 antibody and a mobile antigen antibody complex is formed. This mobile antibody-antigen complex migrates through the absorbent device towards the test area "T." In the test area "T," a monoclonal antihuman p30 antibody is immobilized. This immobilized antibody captures the above complex so that an antibody-antigen-antibody sandwich is formed. The conjugated pink dye particles concentrate in a narrow zone on the membrane. When the p30 concentration exceeds 4ng/mL the pink dye particles will form a pink colored band in the test area "T" indicating a positive test result. In the area "C" there are stationary antiimmunoglobulin antibodies which bind excess monoclonal antihuman p30 antibodies that do not bind to the antibodies in area "T". The captured pink dye particles will form a pink colored band in the control area "C" indicating the test worked properly.

B. QUALITY CONTROL

B.1 Each new lot number must be tested with a known positive and negative control before use.

| Document ID | Revision | Approval | Date Published |
|-------------|----------|-----------------------------------|---------------------|
| 1601 | 13 | Supervising Criminalist - Biology | 8/7/2019 8:50:14 AM |

- B.2 Results must be documented in the Laboratory Asset Management System (LAM).
- B.3 A positive control must be tested each day of use prior to or in conjunction with the testing of any unknown or suspected semen samples.
- B.4 Results of the day of use quality control testing must be documented in the case notes and include the lot# and expiration date.
- B.5 If the used quality control measures do not produce the expected result, the test will not be used on evidentiary samples and troubleshooting will be performed. New solutions or materials may be required.

C. SAFETY

- C.1 Treat all biological samples as potentially infectious. Gloves, a face mask, eye protection (e.g. safety glasses or a face shield) and a lab coat must be worn.
- C.2 Appropriate manufacturer's product insert must be read prior to performing this procedure for the first time.
- C.3 Distinguish all waste as general, biohazard or sharps and discard appropriately.

D. REAGENTS, STANDARDS, AND CONTROLS

- D.1 A known semen stain is used to test the cards. This should not be a semen stain utilized for routine positive control testing of acid phosphatase reagents as a pH change may occur which could affect the ability to obtain the expected positive result.
- D.2 *OneStep* ABACard® p30 cards
 - D.2.1 These cards may be used until depleted; however, the cards must be discarded on the expiration date. Storage will be according to manufacturer's recommendations.

E. EQUIPMENT

E.1 Tubes

| Document ID | Revision | Approval | Date Published |
|-------------|----------|-----------------------------------|---------------------|
| 1601 | 13 | Supervising Criminalist - Biology | 8/7/2019 8:50:14 AM |

E.2 Pipettes

E.3 Timer

F. PROCEDURES

F.1 Remove the test device and the dropper from the sealed pouch.

F.2 Label the device.

F.3 Add 200 μ L (6 drops using the manufacturer's supplied dropper) of the supernatant prepared from the 'Extraction of Possible Semen Stains' procedure to the sample well.

F.4 Read result in 10 minutes. Positive results can be seen as early as 1 minute depending upon the p30 concentration. Negative results must be given the entire 10 minutes.

F.5 The high dose hook effect occurs when the p30 concentration is too high. Excessive amounts of p30 bind not only to the mobile monoclonal antibody to form an antigen-antibody complex, but also free p30 migrates towards the test area "T." The antibody in the test area is blocked by this free p30 and therefore the mobile antigen-antibody complex with the pink color cannot bind to the immobilized antibody. As a result no pink line will form in the test area. Therefore, all stains that are acid phosphatase positive and p30 negative should be repeated with a dilution 10 to 10,000 fold depending on the strength of the corresponding acid phosphatase test.

G. INTERPRETATION GUIDELINES

G.1 If there are two pink lines, one each in the test area "T" and in the control area "C," the test result is positive and indicates that the p30 level is at or above 4 ng/mL.

G.2 If there is only one pink line, in the control area "C", the test result is negative. This may indicate that no seminal fluid is present, the p30 level is below 4 ng/mL, or the presence of the high dose effect (false negative).

G.3 If there is no pink line visible in the control area "C", the test is inconclusive. Repeat the test and reexamine the test procedure carefully.

| Document ID | Revision | Approval | Date Published |
|-------------|----------|-----------------------------------|---------------------|
| 1601 | 13 | Supervising Criminalist - Biology | 8/7/2019 8:50:14 AM |

G.4 Positive results may be obtained with male urine and breast milk.

H. REFERENCES

- H.1 Poyntz, F.M. and Martin, P.D., "Comparison of p30 and Acid Phosphatase Levels in Post-coital Vaginal Swabs from Donor and Casework Studies", *Forensic Science International*, 1984, 24: 17 – 25
- H.2 Sensabaugh, G.F., "Isolation and Characterization of a Semen Specific Protein from Human Seminal Plasma: A Potential Marker for Semen Identification", *Journal of Forensic Sciences*, 1976, 23: 106 – 115
- H.3 ABACard® p30 Test For the Forensic Identification of Semen Technical Information Sheet, Abacus Diagnostics, 2011

| Document ID | Revision | Approval | Date Published |
|-------------|----------|-----------------------------------|---------------------|
| 1601 | 13 | Supervising Criminalist - Biology | 8/7/2019 8:50:14 AM |